

**REMARKS**

Claims 5, 7, 8, 10, 11, 13, 14, 16, and 17 are pending in this application.

The courtesy of the interview conducted on October 13, 2009, is acknowledged and appreciated. The Interview Summary accurately reflects the substance of the interview and no additional comments are deemed necessary.

**I. Rejection of Claims under 35 U.S.C. §103**

**A.** Claims 5, 7, 8, 10, 11, 13, 14, 16, and 17 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Kikuchi (US 2002/0085482) in view of Maruyama (USPN 5,827,593).

The rejection is respectfully traversed.

**Independent Claims 5 and 16**

The Office Action maintains that paragraph [0049] of Kikuchi discloses "a diameter of the penetration hole 2c is equal to or greater than a diameter of the center hole 1b." However, each of the different embodiments of Kikuchi discloses that the larger diameter penetration hole in the sheet (comprising at least a light transmitting sheet) and the center hole in the disc substrate are formed before the sheet and the disc substrate are laminated together. For example, paragraph [0058], referring to Fig. 4, describes:

[0058] The fixed stage 11 is for mounting the sheet 4. A longitudinally movable pin 13 is disposed on the fixed stage 11 at a portion facing to the movable stage 12. The longitudinally movable pin 13 moves upwardly and downwardly, that is, in both directions of protruding from the fixed stage 11 and of drawing back into the fixed stage 11. A diameter of the longitudinally movable pin 13 is designed to be equal to the diameter of the penetration hole 2c of the above-mentioned sheet 4. ***The sheet 4 can be placed on the fixed stage 11 by engaging the penetration hole 2c of the sheet 4 with the longitudinally movable pin 13.*** Also, a positioning pin 14 which is cylindrically protruded above the longitudinally movable pin 13 is disposed for positioning the substrate. ***A diameter of the positioning pin 14 is designed to be substantially equal to a diameter of the center hole 1b of the above-mentioned disc substrate 1. The disc substrate 1 can be supported by the longitudinally movable pin 13 while the center of the disc substrate 1 is matched with the positioning pin 14.*** The thus-configured fixed stage 11 is designed such that the sheet 4 can be mounted by engaging with the

longitudinally movable pin 13 on the fixed stage 11, and the fixed stage 11 can be supported by the longitudinally movable pin 13 by engaging with the positioning pin 14. (Emphasis added)

It is clear from the above description that, even if a diameter of the penetration hole 2c of the sheet 4 is equal to or greater than a diameter of the center hole 1b of the disc substrate 1, the penetration hole 2c of the sheet 4 and the center hole 1b of the disc substrate 1 are formed *before* the sheet 4 and the disc substrate 1 are laminated together. However, independent claims 5 and 16 delineate that the light transmitting layer is on the disc-like shaped substrate at the time of cutting and punching to form center holes in the light transmitting layer and the disc-like shaped substrate.

The Office Action admits Kikuchi fails to teach the claimed cutting step and punching step (see page 3, lines 4-11 and page 7, lines 5-8 of the Office Action). The Office Action asserts, "However, Maruyama teaches a cut-punch 6 is disposed at the center of the inner circumference holding ring 5 (see col. 3 lines 60-61). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the method of Kikuchi in manufacturing an optical disc so that the center hole could be cut first and then punched out as taught by Maruyama. The modification would have been obvious because of the benefit of having a two step process in acquiring a larger diameter on the light transmitting layer than an inner diameter of the center hole in the substrate" (see page 3, lines 11-17 and page 7, lines 9-15 of the Office Action).

However, Maruyama fails to teach the claimed cutting step and punching step. In the claimed punching step, the area inside the circular cut is pressurized in a thickness direction by the punching tool to *divide the light transmitting layer at the circular cut and to punch the light transmitting layer and the substrate*, thereby forming the center hole, in the light transmitting layer, at a larger inner diameter than that of the center hole in the substrate. In other words, the punching step forms two center holes having inner diameters different from

each other, one (larger diameter) center hole in the light transmitting layer and one (smaller diameter) center hole in the substrate.

Meanwhile, Maruyama teaches that the first and second substrates 20 and 26 are pasted with adhesive *after the center hole has been formed in each substrate* (see col. 4, line 41 to col. 5, line 41). Maruyama fails to teach the claimed punching step of forming two center holes having inner diameters different from each other. Further, Maruyama fails to teach the claimed cutting step of forming a circular cut in the light transmitting layer after the light transmitting layer is formed on the information recording face of the disc-like shaped substrate (i.e., the cutting step occurs between the molding step and the punching step).

It should be noted that Maruyama discloses a receipt groove 43 formed in the first substrate 20. However, the receipt groove 43 is formed by molding or in the molding step (see col. 5, lines 33-35). Moreover, the inner diameter of the receipt groove 43 is larger than that of the center hole of the first substrate 20 (see Fig. 2). Namely, the first substrate 20 is NOT divided at the receipt groove 43. Thus, the receipt groove 43 is irrelevant to the circular cut recited in claims 5 and 16.

Though Maruyama teaches a cut-punch 6 in Fig. 1, the cut-punch 6 is used for forming a center hole *in a single disc substrate* in a molding step (see col. 4, lines 41-46). No additional layer (e.g., light transmitting layer) can be laminated on the disc substrate in the molding step. Even if an additional layer were laminated on the disc substrate, the cut-punch 6 would form a center hole having the same diameter as that of the center hole of the substrate in the additional layer (e.g., light transmitting layer). The cut-punch 6 cannot form a center hole having an inner diameter different from that of the center hole of the substrate in the additional layer (e.g., light transmitting layer).

Kikuchi does not remedy the deficiencies of Maruyama. Kikuchi also teaches that the sheet 4 and the disc substrate 1 are *laminated after the center holes have been formed in*

them respectively (see paragraphs [0056] - [0057] and Fig. 4). In view of the above, Kikuchi and Maruyama, considered alone or in combination, do not disclose or suggest the subject matter recited in claims 5 and 16. For at least the above reasons, independent claims 5 and 16 are patentable over Kikuchi and Maruyama.

#### Claim 7

The Office Action admits Kikuchi fails to teach the subject matter of claim 7 (see page 3, line 19 to page 4, line 4 of the Office Action). The Office Action asserts, "However, Maruyama teaches that the first circular surface including the inner non-data region having the stack-rib of the circular protrusion and the opposite side or the second circular surface being flat (see col. 4 lines 47-58)" (see page 4, lines 4-7 of the Office Action).

Though Maruyama discloses the stack-rib 41 (the alleged circular protrusion) in Fig. 2, no layer corresponding to the claimed light transmitting layer is formed around the stack-rib 41 (see Fig. 2). Therefore, Maruyama fails to teach the feature "the cut is formed in the light transmitting layer along an outer side of an outer circumference of the circular protrusion" recited in claim 7. Therefore, claim 7 is patentable over Kikuchi and Maruyama for at least the above reasons as set forth for claim 5, from which it depends, as well as for this additional feature that it recites.

#### Claims 8 and 10

The Office Action asserts that Maruyama teaches the subject matter of claims 8 and 10 (see page 4, lines 8-12 and 16-20 of the Office Action). Moreover, the Office Action indicates that a heated molten material is injected through the sprue bushing 9 into the cavity 12 by the injection molding device connected to the bushing so that the molten material flows from the central portion towards the outer peripheral in the cavity 12, col. 2 lines 1-3" (see page 4, lines 12-15 and line 20 to page 5, line 1 of the Office Action).

However, the indicated process in Maruyama is an *injection molding process for molding the disc substrate* (see col. 1, lines 46-49). Maruyama fails to teach the feature "a resin having fluidity is supplied to the vicinity of a center of the substrate while the substrate is rotated to allow the resin to flow outward in a radial direction by centrifugal force for spread, thereby forming the light transmitting layer (on the substrate) at the light transmitting layer formation step" recited in claims 8 and 10. Therefore, claims 8 and 10 are patentable over Kikuchi and Maruyama for at least the above reasons set forth for claims 5 and 7, from which they depend, as well as for this additional feature that they recite.

#### Claims 11 and 13

The Office Action asserts that Maruyama teaches the subject matter of claims 11 and 13 (see page 5, lines 2-7 and 9-14 of the Office Action). Moreover, the Office Action indicates that a protective layer 23 made of an UV-radiation-curable resin is formed, referring to col. lines 9-19 (see page 5, lines 7-8, 14-15 of the Office Action).

However, Maruyama fails to teach the feature "radiating a radiation ray so that the light transmitting layer is semi-cured at the light transmitting layer formation step" recited in claims 11 and 13. Maruyama also fails to teach the claimed re-irradiation step of radiating a radiation ray again to the semi-cured light transmitting layer so as to completely cure the light transmitting layer *after the cutting step*. Therefore, claims 11 and 13 are patentable over Kikuchi and Maruyama for at least the above reasons as set forth for claims 8 and 10, from which they depend, as well as for these additional features that they recite.

#### Independent Claims 14 and 17

The Office Action asserts that Maruyama teaches a manufacturing device comprising a cutting device and a punching device corresponds to the claimed cutting device and punching device. Moreover, the Office Action indicates that the cut punch 6 disclosed in

Maruyama corresponds to both the cutting device and the punching device (see page 5, line 16 to page 6, line 9 of the Office Action).

However, this assertion is inconsistent. If the cut punch 6 corresponds to the claimed cutting device, the cut punch 6 cannot correspond to the claimed punching device.

Alternatively, if the cut punch 6 corresponds to the claimed punching device, the cut punch 6 cannot correspond to the claimed cutting device.

Further, the claimed punching device pressurizes the area inside the circular cut in a thickness direction to divide the light transmitting layer at the cut and to punch the light transmitting layer and the substrate, thereby forming the center hole at a larger inner diameter than that of the center hole in the substrate in the light transmitting layer. In other words, the punching device forms two center holes having inner diameters different from each other.

Meanwhile, Maruyama teaches that the first and second substrates 20 and 26 are pasted with adhesive *after the center hole has been formed in each substrate* (see col. 4, line 41 to col. 5, line 41). The cut-punch 6 disclosed in Maruyama is used for forming a center hole in a single disc substrate in a molding step (see col. 4, lines 41-46). No additional layer (e.g., light transmitting layer) can be laminated on the disc substrate in the molding step. Even if it were presumed that an additional layer were laminated on the disc substrate, the cut-punch 6 would form a center hole having the same diameter as that of the center hole of the substrate in the additional layer (e.g., light transmitting layer). The cut-punch 6 cannot form a center hole having a diameter different from that of the center hole of the substrate in the additional layer (e.g., light transmitting layer).

The Office Action admits Maruyama fails to teach the claimed cutting device and punching device (see page 6, lines 9-14 of the Office Action). Applicants agree with the Office Action's admission.

The Office Action further asserts, "However, Kikuchi teaches that the diameter of the penetration hole 2c is equal to or greater than a diameter of the center hole 1b (see paragraph [0049])" (see page 6, lines 14-16 of the Office Action).

However, Kikuchi does not remedy the above deficiencies of Maruyama. As noted above, Kikuchi also teaches that the sheet 4 and the disc substrate 1 are *laminated after the center holes have been formed* in them respectively (see paragraphs [0056] - [0057] and Fig. 4).

Thus, Maruyama and Kikuchi, considered alone or in combination, do not disclose or suggest either the cutting device or punching device, recited in independent claims 14 and 17. For at least the above reasons, claims 14 and 17 are patentable over Maruyama and Kikuchi.

In view of the foregoing, reconsideration of the rejection and allowance of claims 5, 7, 8, 10, 11, 13, 14, 16, and 17 are respectfully solicited.

## **II. Conclusion**

In view of the foregoing, it is respectfully submitted that this application is in condition for allowance. Favorable reconsideration and prompt allowance of the claims are earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number set forth below.

Respectfully submitted,



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Attachment:

Petition for Extension of Time

Date: October 20, 2009

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